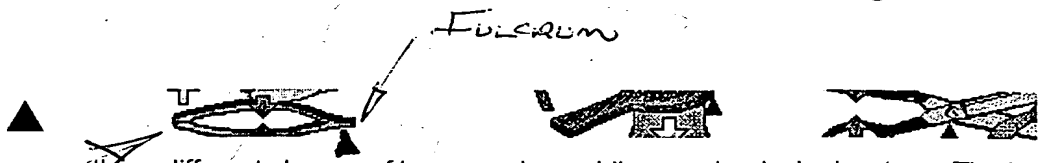
APPENDIX B



There are three different classes of lever, each providing mechanical advantage. The lev referred to as class 1, class 2 and class 3. Each class has different positions for the force and fulcrum (pivot point).

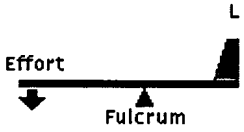
Class 1 Lever

This is the most common type of lever. With a class 1 lever the fulcrum is in the middle. effort is on one side and the load is on the other.

A see saw is an example of a class one lever. Other examples are a crowbar, scissors, hammer, tin snips or weighing scales.

The distance between the effort and the fulcrum, and also the load and the fulcrum dete the mechanical advantage and velocity ratio of the class 1 lever.

If the load and effort are equal, and they are also both the same distance from the fulcrum, then the lever will balance or be in ***equilibrium***.

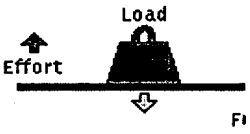


Class 2 Lever

With a class 2 lever, the fulcrum is at one end, the effort is at the other end and the load middle.

A wheelbarrow is an example of a class 2 lever. Other examples include bottle openers, crackers and foot pumps.

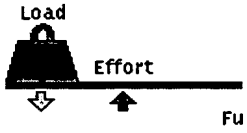
A class two lever allows a large load to be lifted by a smaller effort. Because the load is always closer to the fulcrum, the effort is always less than the load.



Class 3 Lever

With a class 3 lever, the pivot is at one end, the load is at the other and the effort is in th A shovel is an example of a class 3 lever. Other examples are a pair of tweezers, a fishi Arms and legs are also examples of class 3 levers.

A class three lever allows a small load to be lifted by a larger effort. Because the effort is always closer to the fulcrum, the load is always less than the effort, but the load always moves through a larger distance than the effort.



LINKAGES

A linkage is a mechanism made by connecting together two or more levers. The linka be made to change the direction of a force or make two or more things move at the s time.

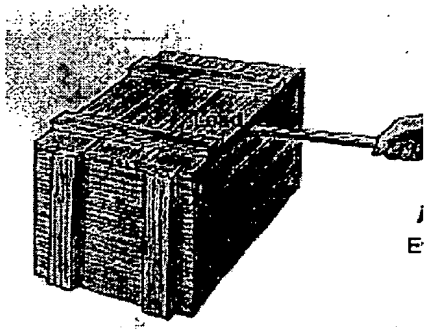
Linkages can be used to make things move in opposite directions. The movement is reversed

FORCE MULTIPLIERS

You can use a mechanism to move something more easily. The diagram below shows s examples of **levers**. Some levers multiply the *force* you apply.

Levers are the simplest form of mechanism. A lever is a rigid beam that can rotate abou point called the fulcrum. An effort applied to one end of the beam will cause a load to be at the other. By moving the fulcrum nearer to the load, you can lift a large load with only effort.

If you look at the diagram on the right you will see that the force you apply at the end of the crowbar is smaller than the force applied to the load, but the load moves a much shorter distance than effort.



This increase in applied force is known as **Mechanical Advantage**. Each of the mechanisms shown below use mechanical advantage to multiply the force applied at the effort to provide a greater force at the load.

DISTANCE MULTIPLIERS

Levers can also be used to multiply the distance the applied force (the effort) moves. T you apply moves a short distance but makes the load move a greater distance. This m however, that the applied force has to be greater than the load.

If you look at the windscreen wiper mechanism shown on the right you will see that the effort point moves much less than the load, but the force applied at the effort is greater than the load.

We call this increase in movement the **Velocity Ratio**